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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/369,679	08/05/1999	BRIAN KEVIN PAUL	245-53153	7102

7590 04/11/2002

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EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 04/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

MF-11

<b>Office Action Summary</b>	<b>Application No.</b> 09/369,679	<b>Applicant(s)</b> PAUL ET AL.	
	<b>Examiner</b> Allan W. Olsen	<b>Art Unit</b> 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) 4-10, 23, 30-32, 37-41, 45 and 59-64 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 11-14, 18-22, 24-29, 33-36, 42-44, 46 and 50-58 is/are rejected.
- 7) ☒ Claim(s) 15-17 and 47-49 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                            | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4, 5</u> . | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election with traverse of the group I invention, claims 1-58, in Paper No. 8 is acknowledged. The traversal is on the grounds that it would be more burdensome for the Office to separately examine inventions that the examiner has characterized as having a combination/sub-combination relationship. This is not found persuasive because the restriction requirement specifically indicated how the criteria for justifying the restriction were met and Applicant did not show how the examiner had erred or failed to meet the criteria set forth in the MPEP § 806.05(c). Applicant merely asserts that the imposition of a restriction requirement places a greater burden upon the Office. No further statements are provided in support of this assertion.

Also in Paper No. 8, Applicant responded to two election of species requirements. The examiner acknowledges Applicant's election of diffusion bonding as the method of bonding the lamina and Applicant's election of applying an electric current as the means for removing the fixture bridges. Applicant did not specifically traverse the election of species requirements.

Applicant's election of species in Paper No. 10 is acknowledged. Applicant elected with traverse the following species: 1) microlamination/metal microlamination as the fabrication technology; 2) chemical etching as the method of lamina preparation; 3) metal, as the material of at least one lamina; and 4) a heat pump as the device being formed. The traversal is on the grounds that each elected specie reads upon every claim of the previously elected invention (claims 1-58).

The examiner notes that the election of species requirement is solely for the purposes of focusing the initial search. The initial examination will consider the claims only in view of the elected species. Should the initial search reveal prior art that is applicable against the elected species, appropriate rejections would then be made. However, should the examiner determine that the elected species constitute allowable subject matter, the examination process would proceed with the consideration of the nonelected species.

The restriction and species election requirements are still deemed proper and are therefore made FINAL.

Claims 59-64 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in Paper No. 8.

Of the claims remaining under consideration (i.e. group I, claims 1-58): claims 30-32 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to the nonelected species for the method of bonding lamina; claims 4-10, 37-41 and 45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to the nonelected species for the method of removing the fixture bridges; claim 23 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected specie of lamina material. In summary, claims 4-10, 23, 30-32, 37-41, 45 and 59-64 are withdrawn from consideration and claims 1-3, 11-22, 24-29, 33-36, 42-44, and 46-58 are presently under consideration.

### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference number 73 which is mentioned on page 22, line 15 in the description of figure 11. Also, reference number 78 is said to be a hole in the platform 72 through which the electrode tip 76 gains access to the workpiece. While figure 11 does represent this description, the examiner notes that reference number 78 is used to denote an additional hole which appears similar to hole 79. The examiner requests either clarification or correction in regards to reference number 78 in figure 11. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

**Claims 1-3, 11, 13, 14, 18-22, 24-29, 33-36, 42-44, 46 and 50-58 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 5,932,940 issued to Epstein et al. (hereinafter, Epstein).**

Epstein teaches a method of making monolithic devices, including a heat pump. The method comprises bonding lamina together, at least one of which may be characterized as having a structure and one or more substructures. The structure and substructures are linked by a fixture bridge which spans a gap between the structure and substructures. The structure and substructures are separated from one another upon the removal of the bridging material. Epstein teaches that the such patterning can be accomplished with electro-discharge milling which is a process by which the structure to be patterned is contacted by two electrodes. Epstein teaches the use of diffusion bonding as a means of combining lamina so as to form a monolithic device. Epstein teaches that lamina are prepared for lamination by first conducting a chemical etching step. The chemical etching may be used as a means of creating structures within the lamina before they are diffusion bonded or it may be used to clean or planarize a layer in preparation for bonding. Epstein teaches that the device may include layers of metal. Epstein's method includes etching trenches with very high aspect ratios (e.g. ~40:1). Epstein teaches fabricating arrays of such devices the See: abstract; column 7, lines 1-12; column 12, lines 35-45; column 13, lines 6-8; column 19, lines 1-60; column 33, lines 60-62; column 39, lines 22-25; column 46, lines 1-6, 22-25 and 45; column 48, lines 42-66; column 50, lines 34-65; column 53, lines 59-61; column 58, lines 39-42; column 59, lines 1-16; figures 7, 14, 28.

***Claim R jections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Epstein in view of U.S. Patent 4,647,748 issued to Glassman.**

Claim 12 is dependent upon claim 1. Epstein teaches the limitations of claim 1 as indicated in the above 102 rejection.

Epstein does not teach using a carbon tipped electrode.

Glassman teaches using a carbon tipped electrode.

It would have been obvious to one skilled in the art to use a carbon tipped electrode for the electro-discharge milling operation of Epstein because Glassman teaches by using carbon tipped electrodes allows more complex structures to be created because carbon electrodes are more easily machined.

***Allowable Subject Matter***

Claims 15-17 and 47-49 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Conclusion**

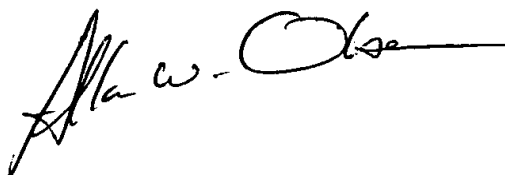
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents 5,749,226 (Bowman et al.), 6,100,463 (Ladd et al.), 6,121,539 (Johnson et al.) and 6,148,635 (Beebe et al.) each pertain to the formation of heat pumps through a lamination process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is (703) 306-9075. The examiner can normally be reached on Monday through Friday from 9:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (703) 308-4333. The fax phone number for this Group is (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Allan Olsen, Ph.D.  
April 8, 2002

A handwritten signature in black ink, appearing to read "Allan Olsen", with a long horizontal stroke extending to the right.